

Remarks

In paragraph 2 of the Official Action, Examiner
objected to the specification. The specification has been
amended to replace the word "he" with the word "the", in
5 order to correct a typographical error. Applicants
appreciate Examiner's careful reading of the specification.
However, Examiner's objection to reference 176 is
respectfully traversed, because there is no item 178 on
Figure 1. It is respectfully submitted that the reference
10 number 176 is correct.

In paragraphs 3 and 4, Examiner objected to the
drawings. Figures 2B and 2D are being amended in a
separate letter to the Chief Draftsman to change the
reference character for processor C FIFO to 287 from 288.
15 The specification is being amended to change the reference
number consistently with the amendment to the drawings.

With reference to section c of paragraphs 3 and 4,
reference numbers 250 and 260 are described at least on
page 25, line 22. Reference numbers 252 and 262 are
20 described at least on page 26, line 5. Reference numbers
254 and 264 are described at least on page 27, lines 4 and
5. Reference numbers 256 and 266 and reference numbers 258
and 268 are described at least on page 27, lines 14-20.

Reference number 200 is described at least on page 27 line 23.

The objections to the drawings having been corrected or addressed, Examiner is respectfully requested to
5 withdraw the rejection.

Regarding Examiner's objection in part a) of paragraph 6 to claims 1, 11 and 21, the phrase "the plurality of entities" has been changed to "a plurality of entities" in these claims. Regarding Examiner's objection in part b) of
10 paragraph 6 to claims 3, 13, and 23, an additional "and" has been removed in these claims. These changes are of a typographical nature.

Regarding Examiner's objection to claim 11 in part c) of paragraph 6, "the incoming communication interface
15 output" is correct, but the output had not been stated in the claim. Claim 11 has been amended to state the output.

regarding Examiner's objection to "incoming communication interface output" in part d), the claim has been amended to explicitly provide antecedent basis for the
20 output.

Regarding Examiner's objection in part e) of paragraph 6, claims 1, 11, and 21 have been amended to match the terms in the specification.

The objections having been addressed or explained, Examiner is respectfully requested to withdraw the objections.

In paragraphs 7 and 8 of the Official Action, Examiner
5 rejected claim 31 under 35 U.S.C. 102(e) as being anticipated by Oden [US 6,862,282 B1]. This rejection is respectfully traversed.

Claim 31 recites, "storing the communication in a first storage accessible to a plurality of entities".
10 Examiner suggests that scheduled pointer queue 304, free pointer queue 306, and complete pointer queue 308 should be understood as storage accessible to a plurality of entities (i.e. processors 0...N as shown in Figure 2, 18a-18N). However, although each processor contains a scheduled
15 pointer queue 304, the scheduled pointer queue 304 of processor 0 is not accessible to processor N, and the scheduled pointer queue 304 of processor N is not accessible to processor 0. Each queue is accessible to only one processor. The same applies to free pointer queue
20 306 and complete pointer queue 308. These queues are not accessible to a plurality of entities, therefore claim 31 is patentably distinguishable over Oden.

In paragraphs 9-10 of the Official Action, Examiner rejects claims 1-3, 5-7, 10-13, 15-17, and 20 under 35 U.S.C. 103(a) as being unpatentable over Oden, US 6,862,282 in view of Muller et al. US 6,650,640; hereinafter Muller.

5 These rejections are respectfully traversed.

Claims 1 and 11 recite, "directly and sinebusly storing the communication received." As Examiner notes, Oden does not teach that the storing operating for the communication received is directly and sinebusly performed.

10 Examiner suggests that it would be obvious to combine the direct memory access mechanism (i.e., DMA engine) described by Muller with the method and system for ordering packets in a multi-processor system described by Oden.

It noted that Oden does not teach or suggest this combination. However, not only does Oden not teach the combination, it wouldn't make any sense to make this combination, for several reasons.

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First, Oden expressly states that his invention is designed to minimize memory requirements (See col. 1, lines 20-27; col. 1, lines 32-35; and col. 2, lines 1-3). By contrast, a DMA mechanism as proposed by Examiner requires a large number of memory locations or registers, because it would not reuse locations as soon as they become available,

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but rather would require the cycling through a range of locations in a static order. Because the memory will not become released in the order in which it is used, a DMA arrangement proposed by Examiner would have to be large enough to ensure that when the DMA reached the end of the buffer and began overwriting previously used portions, that all of the memory locations being overwritten were no longer in use. Thus, a DMA arrangement will have to be larger than Oden, which would run counter to Oden's stated purpose of minimizing memory requirements.

Furthermore, if a DMA engine were employed in place of the storing operation described by Oden, not only would internal memory requirements be increased, contrary to the intended purpose of the invention, but a risk would be introduced that data could be lost.

Specifically, the storing operation described by Oden relies on a distributor control module that "de-queues a pointer for the processor packet memory 302 as indicated by path 205. The pointer is de-queued from the free pointer queue" (col. 4, lines 39-41). The communication (i.e. data packet) is then written into processor packet memory at the location indicated by the pointer. When the processed data packet is later collected by the collector module, the

associated pointer is freed for re-use (see col. 5, lines 17-29). This method of reusing memory locations as they become available is incompatible with DMA.

Oden teaches, "Advantageously, processing of
5 subsequent packets continues even if the processing of an earlier packet has not completed" (col. 1, lines 63-65). In the storing operation described by Oden, this is possible because processor packet memory locations are not freed for reuse until the processed data packets are
10 collected by the collector module. Thus, to minimize the memory requirements, the memory freed for reuse must be reused, and yet the memory may not be freed in the order in which the packets were originally stored. In contrast, DMA cycles through memory locations in a static order, and so
15 if a DMA engine were employed instead of the storing operation described by Oden, it is possible that processed data packets would be overwritten before they were collected if no more memory were used, an explicitly stated objective Oden.

20 So, either more memory must be used or the data can be lost. For these reasons, the DMA mechanism proposed by Examiner would render the invention described by Oden

unsuitable for its intended purpose. It is therefore improper to make the combination proposed by Examiner.

It is clear that Oden was aware of DMA, and employed DMA where appropriate: he references DMA in the packet collection operation (col. 5, lines 12-16). If Oden wanted to combine a DMA arrangement for receipt of packets, he would have done so. However, he does not reference DMA in the storing operation, most likely because, as noted above, the storing operation he describes cannot be combined with DMA as described by Muller without increasing the memory requirements, which runs counter to the explicitly stated purpose of the invention. Therefore, the combination of Oden and Muller is improper, and claim 1 is patentably distinguishable over Oden and Muller. Because claims 2-3, 5-7, and 10 depend from claim 1, these claims are patentably distinguishable over Oden and Muller. Independent claim 11 recites a similar feature and is patentably distinguishable over Oden and Muller for the same reason. Because claims 12-13, 15-17, and 20 depend from claim 11, these claims are patentably distinguishable over Oden and Muller.

In paragraph 11 of the Official Action, Examiner rejects claims 4 and 14, relying on the rejection of claims

1-3, 5-7, 10-13, 15-17, and 20 using Oden and Muller to show the features of these claims, and adding Kimball et al. under 35 U.S.C. 103(a) to show the additional features of claims 4 and 14.

5 This rejection is respectfully traversed. As noted above, the combination of Oden and Muller is improper, and therefore the combination of Oden, Muller, and Kimball is improper. Thus, claims 4 and 14 are patentably distinguishable over Oden, Muller, and Kimball.

10 In paragraph 12 of the Official Action, Examiner rejects claims 8, 9, 18, and 19, relying on the rejection of claims 1-3, 5-7, 10-13, 15-17, and 20 using Oden and Muller to show the features of these claims, and adding Wilson et al. under 35 U.S.C. 103(a) to show the additional
15 features of claims 8, 9, 18, and 19.

 This rejection is respectfully traversed. As noted above, the combination of Oden and Muller is improper, and therefore the combination of Oden, Muller, and Wilson is improper. Thus, claims 4 and 14 are patentably
20 distinguishable over Oden, Muller, and Wilson.

 In paragraph 13 of the Official Action, Examiner rejects claims 21-23, 25-27, and 30 under 35 U.S.C. 103(a)

as being unpatentable over Oden in view of Muller and what was well known in the art, as exemplified by Luo et al.

This rejection is respectfully traversed. As noted above, the combination of Oden and Muller is improper, and
5 therefore the combination of Oden, Muller, and Luo is improper. Thus, claims 21-23, 25-27, and 30 are patentably distinguishable over Oden, Muller, and Luo.

In paragraph 14 of the Official Action, Examiner rejects claim 24, relying on the rejection of claims 21-23,
10 25-27, and 30 using Oden, Muller, and Luo to show the features of these claims, and adding Kimball to show the additional features of claim 24.

This rejection is respectfully traversed. As noted above, the combination of Oden and Muller is improper, and
15 therefore the combination of Oden, Muller, Luo, and Kimball is improper. Thus, claim 24 is patentably distinguishable over Oden, Muller, Luo, and Kimball.

In paragraph 15 of the Official Action, Examiner rejects claims 28 and 29, relying on the rejection of
20 claims 21-23, 25-27, and 30 using Oden, Muller, and Luo to show the features of these claims, and adding Wilson to show the additional features of claims 28 and 29.

This rejection is respectfully traversed. As noted
above, the combination of Oden and Muller is improper, and
therefore the combination of Oden, Muller, Luo, and Wilson
is improper. Thus, claim 24 is patentably distinguishable
5 over Oden, Muller, Luo, and Wilson.

Claims 1-31 are patentably distinguishable over the
cited references. Favorable action is solicited.

Respectfully submitted,

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